1056-08-26 **B Sriram*** (sriramb@iitk.ac.in), Hall 2, IIT K, Kalyanpur, Kanpur, 208016. *Comparison of Homogenous cyclic expressions.*

A method to compare generalised homogeneous cyclic expressions of the form $\sum_{cyclic}(\prod_{i=1}^{n}(a_i^{p_i}))^* \sum_{cyclic}(\prod_{i=1}^{n}(a_i^{q_i}))$ where $\sum p_i = \sum q_i = m$ where $m, p_i, q_i \in I^+$ $a_i \in R^+$ or R^- is proposed. A principle diagonal arrangement (PDA) is defined as $a_1 \geq a_2 \geq a_3 \ldots \geq a_n$. The index of global permutation(IGP) is defined as the value of a cyclic permutation such that the arrangement $a_i \geq a_{i+1} \geq a_{i+2} \ldots \leq a_1 \geq a_2 \ldots \geq a_{i-1}$ has the IGP value $= (i-1)$. The expression $\sum_{cyclic}(\prod_{i=1}^{n}(a_i^{p_i}))$ is and can always be expressed as the product of m diagonal matrices whose trace of the product matrix gives the expression. Each matrix entry is of the form that is globally cyclic conforming to a cyclic interchange of the PDA having an unique order. The method states that as the sum of the IGP over all the values for the individual matrices constituting the expression (on tracing the product matrix) is lesser than another such value for a different homogeneous cyclic expression, the expression is higher in value. Moreover if the sum is the same, then no comparison can be made. This result is proved with a natural conclusion as the method. (Received June 06, 2009)